

Remarks:

The above amendments and these remarks are responsive to the Office action dated March 22, 2005. In the Office action, claim 21 is objected to because of an informality. Claims 1-3, 5, 23-25 and 27-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Gillig et al. (US 5,424,689). Claims 21, 26, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillig et al. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gillig et al. in view of Jeong (US 5,705,947). Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gillig et al. in view of Olgaard (US 6,118,346). Claims 6-20 and 34-45 are indicated to be allowable if rewritten in independent form.

Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 6-20 and 34-45 would be allowable if rewritten in independent form. Responsive to the Examiner's indication, allowable claims 6, 8, 15, 20, 34, 41, and 45 have been rewritten in independent form, thus placing those claims in condition for allowance. Claims 7, 9-14, 16-19, 35-40, and 42-44 are also now in condition for allowance because their base claims have been amended into independent form. Accordingly, the objection to claims 6-20 and 34-45 should be withdrawn.

Rejections under 35 USC § 102 and 35 USC § 103

Applicant respectfully traverses the rejection of claims 1-5, 21-33, and 46. In particular, Applicant believes that "cycle slip detector" has been misinterpreted in the Official action of March 22, 2005. Nonetheless, in order to advance prosecution without further delay, claims 1-5, 21-33, and 46 are cancelled without prejudice.

Formal Matters

The objection to claim 21 is rendered moot because claim 21 is cancelled without prejudice.

New Claims

New claims 47-61 have been added. These claims are fully supported by the original specification and drawings, and therefore, do not introduce new matter.

The prior art, including the cited references, does not disclose a phase-locked loop system that includes all of the elements recited in new claim 47. As one example, the cited references do not teach a phase-locked loop system that includes a cycle slip detector configured to detect when the reference and feedback signals deviate *by more than a full cycle*. In the March 22, 2005 Office action, it is stated that the phase detector 405 and the dead zone circuit 413 of Gillig et al. collectively make up a cycle slip detector. Applicant respectfully disagrees because these elements, as well as all other elements taught in Gillig et al., do not detect when the reference and feedback signals deviate by more than a full cycle. The circuitry taught in Gillig et al. detects a less than full cycle phase difference (i.e., less than a 360 degree phase difference). Gillig et al. does not even suggest detecting when the feedback and reference signals deviate by more than a full cycle.

Furthermore, new claim 47 recites, in part:

at least one additional charge pump configured to provide a charge pump current of substantially larger magnitude than that provided by the run-time charge pump only if the reference and feedback signals deviate by more than a full cycle.

(emphasis added).

Gillig et al. does not teach activating the high current charge pump only if the reference and feedback signals deviate by more than a full cycle. The high current charge pump of Gillig et al. is activated when there is a significant phase difference, even if that difference is less than a full cycle. See Col. 4, lines 3-19.

The Official action of March 22, 2005 recognizes that Gillig et al. operates the high current charge pump even if the phase difference is less than a full cycle, stating:

Note that it is only when the two cycles match or are so very very close that the high current source is turned off.
(Official action, Page 2, emphasis added).

Therefore, Gillig et al. does not disclose each element recited in new Claim 47. Accordingly, new claim 47, and all claims depending from new claim 47, should be allowed.

New claim 55 recites, in part:

pumping charge having a current magnitude within a first current range in the absence of cycle slippage; and
pumping charge having a current magnitude within a second current range, greater than the first current range, only when cycle slippage occurs.

As discussed above in reference to claim 47, Gillig et al., as well as the other cited references, do not disclose the concept of pumping the higher current only if cycle slippage occurs (e.g., at least a full cycle deviation). Accordingly, new claim 55 should be allowed.

New claims 56-61 are dependent claims, which should be allowed at least for the same reasons as the claims from which they depend.

Conclusion

Applicants believe that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, Applicant respectfully requests that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

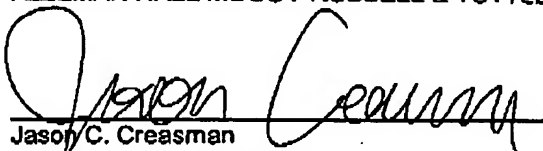
CERTIFICATE OF FACSIMILE

I hereby certify that this correspondence is being sent to the U.S. Patent and Trademark Office via facsimile to (571) 272-8300 on September 22, 2005.

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Respectfully submitted,

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